



# APPEAL BRIEF TRANSMITTAL FORM

First Named Inventor	Alex S. Toback
Title	Connection System for Steel Construction
Serial No.	09/639,599
Filing Date	August 16, 2000
Examiner	Essama Omgba
Group Art Unit	3726
Attorney Docket Number	TOB/102/US
Date	January 11, 2006

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Honorable Sir:

## TRANSMITTAL OF APPEAL BRIEF (PATENT APPLICATION - 37 C.F.R. § 1.192(a))

- 1) Transmitted herewith, in triplicate, is the Appeal Brief in this application with respect to the Notice of Appeal filed on November 11, 2005.
- 2) STATUS OF APPLICANT: This application is on behalf of:

☐ Large Entity  
☒ Small Entity

- 3) FEE FOR FILING APPEAL BRIEF

PURSUANT TO 37 C.F.R. §1.17(c), the fee for filing the Appeal Brief is:

☐ Large Entity \$500.00  
☒ Small Entity \$250.00

- 4) EXTENSION OF TIME

It is hereby petitioned that any required extension of time be granted for filing the Appeal Brief. An extension of 0 month(s) having a fee of \$ 00.00 appears required.

## CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited on the date below with the United States Postal Service as first class mail in an envelope addressed to "Mail Stop Appeal Brief-Patents, Commissioner for Patents, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, Virginia 22313-1450."

Typed or Printed Name Guy D. Yale  
Signature [Signature]

Reg. No. 29,125  
Date: January 11, 2006

First Named Inventor	Title	Attorney Docket Number
Alex S. Toback	Connection System for Steel Construction	TOB/102/US

5) TOTAL FEE DUE

APPEAL BRIEF DUE: \$ 250.00

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Respectfully Submitted,

ALEX S. TOBACK

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**



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Applicant : Alex S. Toback  
Filing Date : August 16, 2000  
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TC/A.U. : 3726  
Examiner : Essama Omgba  
  
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Honorable Sir:

**APPEAL BRIEF**

This brief contains the following sections under the headings and in the order set forth below as required by 37 C.F.R. 41.37(c)(1) and MPEP 1205:

- I. REAL PARTY IN INTEREST
- II. RELATED APPEALS AND INTERFERENCES
- III. STATUS OF CLAIMS
- IV. STATUS OF AMENDMENTS
- V. SUMMARY OF CLAIMED SUBJECT MATTER
- VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

**VII. ARGUMENT**

**VIII. CONCLUSION**

**IX. APPENDICES**

**APPENDIX A CLAIMS INVOLVED IN THE APPEAL**

**APPENDIX B DECLARATION OF ALEX S. TOBACK**

The final page of Section VIII bears the signature of Appellant's attorney.

**I. REAL PARTY IN INTEREST**

The real party in interest is the inventor/applicant Alex S. Toback.

**II. RELATED APPEALS AND INTERFERENCES**

Appeal No. 2004-2329 is related to this application.

There are no known interferences or judicial proceedings related to this application.

**III. STATUS OF CLAIMS**

**a STATEMENT OF STATUS OF ALL CLAIMS IN THIS PROCEEDING**

CLAIMS 1-24 ARE PENDING IN THE APPLICATION.

CLAIMS 1-24 ARE REJECTED IN THE APPLICATION.

**b CLAIMS ON APPEAL**

THE CLAIMS ON APPEAL ARE CLAIMS 1-24.

**IV. STATUS OF AMENDMENT**

Appellant has submitted no amendments subsequent to the final rejection dated July 21, 2005.

**V. SUMMARY OF CLAIMED SUBJECT MATTER**

Briefly stated, claim 1 is directed to a connection system with enhanced load bearing capacity for connecting light-gauge steel panels to a support structure (Figure 1(b) and page 1, lines 14-16). The connection system is comprised of an adhesive 10, which is applied to at least one side of a light-gauge panel 30, and fasteners 20 (Figure 1(b), Figure 8, and page 2, lines 32-33). The fasteners employed in the inventive connection system may take a wide

variety of forms including a self-drilling metal panel fastener which is the subject of U.S. Patent No. 5,304,023 as well as other self-drilling screws, pins, rivets, and clinches (page 1, lines 19-20). The panel is then placed against a support structure (stud **40**) and fasteners **20** are inserted through the panel and support structure (Figure 8 and page 3, lines 16-20). The adhesive is then allowed to cure (page 3, lines 23-24). The adhesive is a two-part epoxy system having a substantially 1:1 resin/hardener mix by weight or volume which has a high viscosity and fully cures at room temperature within 72 hours (page 3, lines 7-12). One acceptable adhesive employed in the inventive connection system is Formulation No.12059A marketed by the Advanced Adhesive Systems of Newington, Connecticut (page 3, lines 8-10). Other acceptable adhesives may be heat-activated materials such as methacrylate and urethane (page 3, lines 13-15). By employing both adhesive and fasteners to light-gauge steel panel connections, the connection system of claim 1 dramatically reduces the number of fasteners required while also enhancing the load bearing capacity and integrity of the connection (page 2, lines 32-34).

Briefly stated, claim 8 is directed to a connection system for connecting at least one light-gauge steel member **30** to a second light-gauge steel member **40** by applying a bead of epoxy **32** and/or **42** to one or both of the steel surfaces (Figure 8, and page 3, lines 16-24). The first light-gauge member **30** is then placed in an overlapping relationship against the second member **40** and fasteners **20** are then inserted through the first member and into the second member by power driver **24** (Figure 8, and page 3, lines 16-24). The fasteners employed in the inventive connection system may take a wide variety of forms including a self-drilling metal panel fastener which is the subject of U.S. Patent No. 5,304,023 as well as other self-drilling screws, pins, rivets, and/or clinches (page 1, lines 19-20, and page 3, lines 21-23). The epoxy **32**, **42** is compressed between the first **30** and second member **40** (Figure 8, and page 3, lines 16-24). The epoxy is allowed to cure (page 3, lines 23-24). The epoxy is a two-part epoxy system having a substantially 1:1 resin/hardener mix by weight or volume which has a high viscosity and fully cures at room temperature within 72 hours

(page 3, lines 7-12). One acceptable adhesive employed in the inventive connection system is Formulation No.12059A marketed by the Advanced Adhesive Systems of Newington, Connecticut (page 3, lines 8-10). Other acceptable adhesives may be heat-activated materials such as methacrylate and urethane (page 3, lines 13-15).

Briefly stated claim 16 is directed to a connection system for connecting at least one light-gauge steel panel **30** to a steel frame member, stud **40**, by applying a bead of epoxy **32** and/or **42** to one or both of the steel surfaces (Figure 8, and page 3, lines 16-24). The inventive connection system may be used with a number of different support structures, such as steel and metal studs, non-metallic studs, framing, FRP plastics panel, and plywood panel (page 4, lines 30-32). The first light-gauge steel panel **30** is then placed in an overlapping relationship against stud **40** and fasteners **20** are then inserted through the light-gauge panel **30** and into the stud **40** by power driver **24** (Figure 8, and page 3, lines 16-24). The fasteners employed in the inventive connection system may take a wide variety of forms including a self-drilling metal panel fastener which is the subject of U.S. Patent No. 5,304,023 as well as other self-drilling screws, pins, rivets, and/or clinches (page 1, lines 19-20, and page 3, lines 21-23). The epoxy **32**, **42** is compressed between the first **30** and second member **40** (Figure 8, and page 3, lines 16-24). The epoxy is allowed to cure (page 3, lines 23-24). The epoxy is a two-part epoxy system having a substantially 1:1 resin/hardener mix by weight or volume which has a high viscosity and fully cures at room temperature within 72 hours (page 3, lines 7-12). One acceptable adhesive employed in the inventive connection system is Formulation No.12059A marketed by the Advanced Adhesive Systems of Newington, Connecticut (page 3, lines 8-10). Other acceptable adhesives may be heat-activated materials such as methacrylate and urethane (page 3, lines 13-15).

Briefly stated, claim 19 is directed to an assembly that is comprised of a support structure, a panel of light-gauge steel mounted to the support structure with a structural adhesive disposed between and at least one fastener driven

through the panel and into the support structure (Figure 8, and page 3, lines 16-20). The fasteners employed in the inventive assembly may take a wide variety of forms including a self-drilling metal panel fastener which is the subject of U.S. Patent No. 5,304,023 as well as other self-drilling screws, pins, rivets, and/or clinches (page 1, lines 19-20, and page 3, lines 21-23). The epoxy is a two-part epoxy system having a substantially 1:1 resin/hardener mix by weight or volume which has a high viscosity and fully cures at room temperature within 72 hours (page 3, lines 7-12). One acceptable adhesive employed in the inventive connection system is Formulation No.12059A marketed by the Advanced Adhesive Systems of Newington, Connecticut (page 3, lines 8-10). Other acceptable adhesives may be heat-activated materials such as methacrylate and urethane (page 3, lines 13-15). By employing both adhesive and fasteners, the inventive assembly of claim 19 dramatically reduces the number of fasteners required while also enhancing the load bearing capacity and integrity of the connection (page 2, lines 32-34).

The superior results of the inventive assembly of claim 19 is demonstrated by the hysteresis curves of Figures 4-7. The superior connection of the inventive assembly is essentially provided by the structural adhesive as opposed to the mechanical fasteners (page 4, lines 10-14, and page 5, lines 7-9). Further documentation as to the superior connection of the assembly of claim 19 is shown through laboratory tests of overlapping lap joint specimens with various numbers of fasteners in combination with the adhesive system (Figure 3).

Briefly stated, claim 22 is directed to an assembly comprising a metal support frame, a panel of light-gauge steel mounted to the support frame, with a structural adhesive disposed in between, and at least one fastener driven through the panel and into the metal support frame (Figure 8, and page 3, lines 16-20). The fasteners employed in the inventive assembly may take a wide variety of forms including a self-drilling metal panel fastener which is the subject of U.S. Patent No. 5,304,023 as well as other self-drilling screws, pins, rivets, and/or clinches (page 1, lines 19-20, and page 3, lines 21-23). The epoxy is a two-part epoxy system having a substantially 1:1 resin/hardener mix by weight or

volume which has a high viscosity and fully cures at room temperature within 72 hours (page 3, lines 7-12). One acceptable adhesive employed in the inventive connection system is Formulation No.12059A marketed by the Advanced Adhesive Systems of Newington, Connecticut (page 3, lines 8-10). Other acceptable adhesives may be heat-activated materials such as methacrylate and urethane (page 3, lines 13-15). By employing both adhesive and fasteners, the inventive assembly of claim 22 dramatically reduces the number of fasteners required while also enhancing the load bearing capacity and integrity of the connection (page 2, lines 32-34).

The superior results of the inventive assembly of claim 22 is demonstrated by the hysteresis curves of Figures 4-7. The superior connection of the inventive assembly is essentially provided by the structural adhesive as opposed to the mechanical fasteners (page 4, lines 10-14, and page 5, lines 7-9). Further documentation as to the superior connection of the assembly of claim 22 is shown through laboratory tests of overlapping lap joint specimens with various numbers of fasteners in combination with the adhesive system (Figure 3).

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

- (1) Whether the Examiner properly combined Applicants Admitted Prior Art (AAPA) and Orowan U.S. Patent No. 3,655,424 (Orowan) to reject the claims.
- (2) Whether the Examiner properly combined AAPA/Orowan and U.S. Patent No. 4,426,425 (Good et al) to reject certain claims.
- (3) Whether the proposed combination of AAPA and Orowan and of AAPA, Orowan and Good et al teach or suggest all of the limitations of the claims including the feature that "the connection is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener"
- (4) Whether claims 1-24 are patentable under 35 U.S.C. §103(a) over Applicant's Admitted Prior Art (AAPA) in view of Orowan (U.S. Patent No. 3,655,424).



- (5) Whether claims 4-7 are patentable under 35 U.S.C. §103(a) over AAPA/Orowan as applied to claim 1 in further in view of Good, et al (U.S. Patent No. 4,426,425).
- (6) Whether claims 8-15 are patentable under 35 U.S.C. §103(a) over AAPA in view of Orowan and Good, et al.
- (7) Whether claims 18, 21 and 24 are patentable under 35 U.S.C. §103(a) over AAPA/Orowan as applied to claims 16, 19 and 22 and further in view of Good, et al.
- (8) Whether the Declaration under 37 C.F.R. § 1.132 was properly considered by the Examiner in rejecting the claims.

## **VII. ARGUMENT**

### **A. THE EXAMINER HAS NOT PROPERLY APPLIED THE LEGAL REQUIREMENTS FOR A REJECTION UNDER 35 U.S.C. §103**

In determining the differences between the prior art and the claims, the question under 35 U.S.C. §103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); Carl Schenck. A. G. v. Nortron Corp., 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983). Furthermore, "a patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the 'subject matter as a whole' which should always be considered in determining the obviousness of an invention under 35 U.S.C. 103". In re Sponnoble, 405 F.2d 578,585,160 USPQ 237,243 (CCPA 1969).

### **The Examiner Has The Burden Of Establishing A *Prima Facie* Case Of Obviousness Within The Legal Requirements Created By The Courts.**

The courts have further established the legal concepts of *prima facie* obviousness. As summarized in MPEP §2142, "the legal concept of *prima facie* obviousness is a procedural tool of examination which . . . allocates who has the

burden of going forward with the production of evidence in each step of the examination process." The MPEP further states "the Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the Examiner does not produce a *prima facie* case, the Applicant is under no obligation to submit evidence of nonobviousness."

To establish a *prima facie* case of obviousness three basic criteria must be met. First, there must some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP §2143.

When the issue is obviousness, the Federal Circuit has recently stated:

"The need for specificity pervades this authority. See, e.g., In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed").

In re Rouffet, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998) ("even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious."). In re Fritch, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (the Examiner can satisfy the burden of showing obviousness of the combination "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references"). In re Lee, 61 USPQ2d at 1433-1434.

**Ample Legal Authority To Support The Conclusion That The Examiner Has Failed To Establish A *Prima Facie* Case Of Obviousness Against Appellant's Pending Claims.**

The burden is on the Examiner to demonstrate that the prior art evidence is sufficient suggestion of the desirability of doing what the inventor has done.

(See MPEP §2142.). At an irreducible minimum, this burden requires the Examiner to apply the facts of the case to "present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." A showing of a suggestion, teaching or motivation to combine the prior art reference is an "essential component of an obvious holding" C.R. Bard, Inc., v. M3 Svstems, Inc., 48 USPQ2d 1225,1232 (Fed. Cir. 1998).

The Examiner has clearly not shown why a skilled artisan, with no knowledge of the claimed invention, would have arrived at the Appellant's claimed invention. This is improper. See, e.g., In re Lee at 1433, citing to In re Kotzab, at 1317 (Fed. Cir. 2000); See In re Dance, 160 F.3d at 1343, 48 USPQ2d at 1637 (Fed. Cir. 1998) ("there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the Applicant").

Obviousness does not require absolute predictability, however, at least some degree of predictability is required. Evidence showing there was no reasonable expectation of success may provide a conclusion of nonobviousness. See MPEP §2143.02 citing In re Reinhart, 189 USPQ 143 (CCPA 1976). The courts have held that for obviousness under 35 U.S.C. §103, there must have been a reasonable expectation of success for the modification proposed by the Examiner. In re O'Farrell, 853 F.2d 894, 903-904, 7 USPQ2d 1673, 1680-1681 (Fed. Cir. 1988). The expectation of success is not whether it would have been obvious to try a modification or combination. Gillette Co. v. S.C. Johnson & Son, Inc., 191 F.2d 720, 725, USPQ2d, 1923, 1927 (Fed. Cir. 1990).

The courts have stated the Examiner cannot discharge himself from the burden of showing all the claimed elements by simply declaring all of the elements of an invention, along with the manner of combining these elements, to be well known in the art. Ex parte Stern, 13 USPQ2d 1379, 1381 (Bd. Pat. App. & Inter. 1989).

**The Examiner Has Resorted To Impermissible Hindsight To Assert That Appellant's Claims Are Obvious Over The Cited References.**

35 U.S.C. §103 specifies that the obviousness of an invention is to be determined as of "the time the invention was made." This requires the Examiner to step backward in time and into the shoes worn by the hypothetical person of ordinary skill in the art when the invention was unknown and just before it was made. See MPEP §2142. "When applying 35 U.S.C. §103, . . . the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention . . . " Hodosh v. Block Drug Co., Inc., 229 USPQ 182, 187, N5 (Fed. Cir. 1986); W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303,312-13 (Fed. Cir. 1983) ("To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher."); In re Gorman, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed.Cir.1991)(It is the prior art itself, and not the applicant's achievement that must establish the obviousness of the combination. Obviousness cannot be established by hindsight combination to produce the claimed invention).

**B. CONTEXT OF APPELLANT'S CLAIMS NOT FULLY APPRECIATED BY EXAMINER.**

The invention of the claims under appeal embrace a seminal development in the light gauge steel construction industry, namely, the use of adhesives in construction involving light gauge steel. As a predicate to consideration of the claims and the rejections, it is very apparent that there are technical subtleties with respect to the disclosed and claimed invention and with respect to the alleged prior art, which may not be readily appreciated. Appellant's invention and the art as cited by the Examiner are from wholly different eras with respect to adhesion technology and are also from wholly different technological fields. In this regard, it should be appreciated that many of the terms and descriptions

employed in the cited art and Appellant's claimed invention have significantly different contexts.

A fundamental understanding of Appellant's invention derives from the field of technology wherein Appellant is joining light gauge metal members within the context of the construction trades by a novel use of adhesives which has not been heretofore achieved, and in fact, was contrary to the prevailing technology at the time of the invention. In Appellant's invention, once the joining process is completed, the principal portion of the joint load-bearing capacity (as contrasted to the cited art) is provided by the adhesive, and not the mechanical fasteners, as recited in the claim 8 representative feature so that members are joined in a connection which is significantly enhanced in load-bearing capacity to the connection provided only by the at least one fastener. The remaining independent claims 1, 16, 19 and 22 recite analogous features in relation to joined elements. Appellant has further documented this novel load-bearing feature in the specification as well as schematically and quantitatively illustrated the same in the figures of the application. The significantly enhanced load-bearing feature provided by Appellant's fastening system is documented by the hysteresis curves of Figures 4-7. When the Orowan '424 reference is properly considered as a whole, a fair inference is that the Orowan fasteners provide the most significant load-bearing factor to the analogously joined assembly. Indeed, the Orowan adhesive functions to enhance the connecting integrity of the mechanical fasteners.

Moreover, the Declaration of Alex S. Toback provides further evidence that there is no basis or suggestion whatsoever that a person of ordinary skill in the art in the light gauge steel construction industry at the time of the invention would have considered adhesives or turn to the Orowan reference in connection with fastening light gauge steel panels to a support structure. A copy of the Declaration submitted to the Examiner on February 8, 2005 is included as an Appendix and is hereinafter referred to as "Declaration".

As explicitly set out in paragraphs 8 and 9 of the Declaration, the problem posed to the inventor was not the relief of load on the fasteners or fretting of the

fasteners as ascribed by the Examiner, but the labor-intensive nature of light gauge steel construction. In this regard, when the Orowan reference is considered as a whole, it does not disclose a technical solution that reduces the labor or expense of light gauge steel construction. Rather, Orowan discloses a complicated and relatively expensive adhesive tape structure that is intended to supplement the conventional mechanical fasteners used in fastening metal members together. (See Declaration para. 9) Thus, the Orowan reference does not have the capacity to reduce in the number of fasteners used nor is there any foreseeable cost saving. Finally, there is no evidence to suggest that the Orowan fastening system substantially enhances the load-bearing capacity as compared to mechanical fasteners alone. (See Declaration, para. 9) This is in direct contrast to Appellant's invention, which reduces the costs and labor demands for assembling light gauge structural panels into a support structure by reducing the number of fasteners required in the process.

Applicant's invention employs the mechanical fasteners to provide a fastening function while the adhesive is curing between the joint members as well as to provide an auxiliary mechanical lock if the joined system should ever be subjected to fire or intense heat which would potentially compromise the integrity of the adhesive bond in a structure which may typically be used for buildings and the like. Indeed, as stated in paragraph 7 of the Declaration, "the light gauge steel construction industry typically must comply with building and fire codes in connection with the integrity of fastening systems." More significantly, until Appellant had considered using adhesive systems in conjunction with light gauge steel construction elements, there was no thought or suggestion whatsoever in the light gauge steel industry of using chemical or adhesive systems in light gauge steel construction. (Declaration, para. 7) Thus, the Examiner is incorrect in his assessment of what constituted "a person of ordinary skill in the light gauge steel construction industry" at the time the invention was made. (See also Declaration, para. 5)

Moreover, it is highly significant and it is explicitly noted that the Orowan '424 reference represents an approach that was originally tried by Applicant, but

the Orowan approach was rejected because it could not provide the requisite load-bearing characteristics. The Orowan '424 reference is clearly concerned with an adhesive tape or adhesive film type adhesion system which Applicant originally considered, but after due testing, rejected the approach since it did not provide sufficient adhesive load-bearing capacity.

It should be appreciated that all of the pending claims of the application incorporate the feature wherein the members (of panel or structure or frame) are joined in a connection that is significantly enhanced in load-bearing capacity to a connection provided by fasteners alone.

**C. THE PROPOSED COMBINATION OF AAPA AND OROWAN IS IMPROPER.**

There is no proper basis for the Examiner's proposed combination of AAPA and Orowan. The rationale advanced by the Examiner is flawed.

The basis for the Examiner's final rejection of claims 1-24 under 35 U.S.C. §103(a) over Applicant's Admitted Prior Art (AAPA) in view of Orowan, U.S. Patent No. 3,655,424 (Orowan) is set forth on page 2 of the Final Action.

The Examiner states as follows:

2. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Orowan (US Patent 3,655,424 ).

With regards to claims 1-3, 8-10, 16, 17, 19, 20, 22 and 23, Applicant, at pages 1 and 3 of the specification to be known as AAPA discloses a connection system for light-gauge steel construction and an assembly wherein numerous self-drilling screws or other fasteners are used to provide the connection between a panel and a support structure. AAPA does not disclose applying an adhesive curable at room temperature to at least the panel or the support structure and placing them against each other. However, it is known to use an adhesive material between plates of a lap joint used in a connection with rivets or other fasteners as attested by Orowan, see column 1, lines 8-30 and figure 1.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used an adhesive material in the connection of AAPA, in light of the teachings of Orowan, in order to relieve the load on the fasteners to a relatively small extent [sic] and give protection against fretting

between the parts joined. Applicant should note that the connection of Orowan is significantly enhanced in load-bearing capacity, see column 1, lines 24-29 in particular.

There is no teaching or suggestion whatsoever in the AAPA of the use of an adhesive, nor the use of a second type of connecting of any kind, nor is there any teaching or suggestion that would motivate anyone in any conceivable way to look to an adhesive or any second connecting means.

Appellant's invention was not motivated in any fashion by the mechanical integrity or load-bearing capacity of the fasteners employed in the prior art structures to which Applicant's invention relates. ***Appellant was motivated to provide a connecting system for light-gauge steel which was less labor intensive and which would accordingly be less costly to implement.*** (See also Declaration, para. 7) In the prior art systems to which the invention relates, numerous mechanical fasteners, typically self-drilling screws, were required in order to provide the required load-bearing characteristics for the structure. Adhesives as such were not employed to connect the light-gauge steel panels to the support frames. (See Declaration, para. 7)

The Examiner fully acknowledges that AAPA does not disclose applying an adhesive curable at room temperature to at least the panel or the support structure and placing them against each other. The logic used by the Examiner is wholly misplaced. The Examiner's motivation for the combination appears to be stated as follows:

However it is known to use an adhesive material between plates of a lap joint used in the connection with rivets or other fasteners is attested by Orowan (see column 1, lines 8-30 and Figure 1).

Therefore it would have been obvious to one of ordinary skill at the time the invention was made, to have used an adhesive material in the connection of AAPA in light of the teachings of Orowan in order to relieve the load on the fasteners to a relatively small extend [sic] and give protection against fretting between the parts joined.



Contrary to the assertions of the Examiner, there was no suggestion whatsoever in AAPA as to any problems with any need to relieve load on the mechanical fasteners, nor were there any problems with fretting given the large numbers of fasteners. Accordingly, there is clearly no proper basis whatsoever for the proposed combination.

**D. THE PROPOSED COMBINATION OF AAPA, OROWAN AND GOOD ET AL IS IMPROPER.**

The Examiner's contention in combining AAPA/Orowan with Good et al is set forth in paragraph 3 of page of the Final Action as follows:

AAPA/Orowan discloses a connection system as shown above except for the adhesive being a two-part epoxy system comprising a resin and hardener mixed in equal portion by weight or volume wherein the adhesive fully cures within approximately 72 hours. However, Good et al teaches such adhesive, see column 2, lines 26- 34 and column 3, lines 18-20. Therefore, it would have been obvious to one of ordinary skill in the art at the time when the invention was made, to have used a two-part epoxy system as the adhesive AAPA/Orowan, in light of the teachings of Good et al in order to achieve a bond with a superior shear and strength.

First of all, nowhere in the proposed AAPA/Orowan combination is there any teaching of any epoxy system whatsoever. Moreover, Appellant is unable to find any specific teaching of a two-part epoxy system comprising a resin and hardener mixed in equal proportions by weight or volume as alleged by the Examiner. Furthermore, the Good et al reference merely mentions metal to metal in passing and nowhere suggests the structures as recited in the claims, for example, the connection of light-gauge steel panel to a second member, etc. Moreover, in the teaching of Good, the achievement of a bond with a superior shear and strength is not the superior bond in shear and strength as recited in Appellant's claims, namely, a connection which is "significantly enhanced in load-bearing capacity to connection provided only by the at least one fastener", but is merely allegedly superior in shear and strength to other epoxy systems. Accordingly, when the Examiner's contention is carefully scrutinized, there is no

basis for the proposed combination, nor does the combination disclose, teach or suggest all the elements of the claims as contended by the Examiner.

**E. THE PROPOSED COMBINATIONS FAIL TO DISCLOSE, TEACH OR SUGGEST EACH OF THE CLAIM FEATURES.**

The Examiner states that "Applicant should note that the connection of Orowan is significantly enhanced in load-bearing capacity, see column 1, lines 24-29 in particular." (Final Action p.2). Here, the Examiner has failed to appreciate the relevant claim text because Applicant is not concerned with enhancing the load-bearing capacity as such, although it is a certainly surprising result of Applicant's invention. The relevant features of Applicant's claims which are not disclosed in the Orowan (or any other cited reference) reference, recite that the load-bearing capacity of the adhesive is such that the panel is joined to the structure in a connection which significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener. The Orowan reference is wholly silent with respect to this claim feature. However, it is very clear that in the Orowan reference, the object is to enhance the effectiveness of the mechanical fasteners. The Orowan reference, when properly considered as a whole, unlike Applicant's object to reduce the labor and save cost in the connecting of light-gauge steel panels to frames, actually necessarily complicates the connecting process. There is no elimination of, for example, mechanical fasteners as accomplished in Applicant's invention.

Likewise, the Examiner really sets forth no basis for a reasonable expectation of success were the references combined.

**F. SPECIFIC ERRORS OF REJECTION FOR EACH OF THE CLAIMS.**

**CLAIMS 1-3 AND 7**

Claims 1-3 and 7 recite as follows:

1. A connection system for connecting at least one light-gauge steel panel to a support structure comprising:

applying an adhesive to at least one of said panel or support structure, said adhesive being curable at room temperature and able to adhere to steel;  
placing said panel against said support structure;  
driving at least one fastener through the panel into said support structure; and  
allowing said adhesive to cure,  
so that said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.

2. The connection system of claim 1 wherein the fastener is selected from the group consisting of self-drilling screws, rivets, pins, and clinches.

3. The connection system of claim 1 wherein each said fastener is a self-drilling screw.

7. The connection system of claim 1 wherein said adhesive fully cures within approximately 72 hours.

Claims 1-3 and 7 have been rejected as unpatentable under 35 U.S.C. §103(a) over AAPA in view of Orowan. The Examiner's rejection of claims 1-3 and 7 should be reversed and the claims deemed patentable because there is no proper basis for the proposed combination of AAPA and Orowan and also because the proposed combination does not disclose, teach or suggest a feature wherein "said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener".

#### **CLAIMS 4-6,8-13, AND 15**

Claims 4-6, 8-13, and 15 recite as follows:

4. The connection system of claim 1 wherein said adhesive is a two-part epoxy system.

5. The connection system of claim 4 wherein said epoxy system comprises a resin and hardener which are mixed in substantially equal portions by weight.

6. The epoxy system of claim 4 wherein said epoxy system comprises a resin and hardener which are mixed in substantially equal portions by volume.

8. A connection system for connecting at least one light-gauge steel member to a second member comprising:

applying a bead of epoxy to at least one of said members, said epoxy being curable at room temperature and able to adhere to steel;

positioning said members in adjacent relationship with said epoxy disposed between said members;

driving at least one fastener through one member into said other member; and

allowing said epoxy to cure,

so that said members are joined in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.

9. The connection system of claim 8 wherein the fastener is selected from the group consisting of self-drilling screws, rivets, pins, and clinches.

10. The connection system of claim 8 wherein each said fastener is a self-drilling screw.

11. The connection system of claim 8 wherein said epoxy comprises a resin and hardener which are mixed in substantially equal portions by weight.

12. The connection system of claim 8 wherein said epoxy comprises a resin and hardener which are mixed in substantially equal portions by volume.

13. The connection system of claim 8 wherein said adhesive fully cures within approximately 72 hours.

15. The connection system of claim 1 wherein said adhesive is composed of a material selected from the group consisting of epoxy, methacrylate and urethane.

Claim 4-6, 8-13 and 15 have been rejected as being unpatentable under 35 U.S.C. §103(a) over AAPA/Orowan as applied to claim 1 and further in view of Good et al, U.S. Patent No. 4,426,425 (Good et al). In addition to the reasons advanced for the patentability of claims 1-3 and 7, these claims are also

patentable for the reason that there is no proper basis for combining the AAPA/Orowan reference with the Good et al reference.

### **CLAIMS 14, 16 AND 17**

Claims 14, 16 and 17 recite as follows:

14. The connection system of claim 8 wherein a bead of epoxy is applied to both members.

16. A connection system for connecting at least one light-gauge steel panel to a steel frame comprising:

applying a bead of adhesive to at least one of said panel or frame, said adhesive being curable at room temperature and able to adhere to steel;

positioning said panel against said frame with said adhesive disposed between said panel and frame;

driving at least one fastener through said panel into said frame; and

allowing said adhesive to cure,

so that said panel is joined to said frame in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.

17. The connection system of claim 16 wherein the fastener selected from the group consisting of self-drilling screws, rivets, pins, and clinches.

Claims 14, 16 and 17 have been rejected by the Examiner as being unpatentable over AAPA in view of Orowan and Good et al. This rejection should be reversed and the claims be deemed allowable for the reason that there is no proper basis for the proposed combination, and further, the proposed combination fails to disclose the feature wherein "said panel is joined to said frame in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener".

### **CLAIM 18**

Claim 18 recites as follows:

18. The connection system of claim 16 wherein the adhesive is selected from the group consisting of epoxy, methacrylate, and urethane.

Claim 18 has been rejected by the Examiner as being unpatentable over AAPA/Orowan as applied to claim 16 and further in view of Good et al. This rejection should be reversed for the reasons previously advanced with respect to claim 16. Further, there is no disclosure or teaching of methacrylate or urethane.

### **CLAIMS 19 AND 20**

Claims 19 and 20 recite as follows:

19. An assembly comprising: a support structure;  
a panel of light-gauge steel mounted to said support structure;  
a structural adhesive curable at room temperature and disposed between said support structure and said panel;  
at least one fastener driven through said panel into said support structure,  
so that said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener.
20. The assembly of claim 19, wherein each said fastener is selected from the group consisting of self drilling screws, rivets, pins and clinches.

Claims 19 and 20 have been rejected as being unpatentable under 35 U.S.C. §103(a) over AAPA in view of Orowan. This rejection should be reversed and the claims be deemed allowable for the reason that there is no proper basis for the proposed combination, and for the reason that none of the references disclose, teach or suggest the feature wherein "said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener".

### **CLAIM 21**

Claim 21 recites as follows:

21. The assembly of claim 19, wherein said adhesive is a two part epoxy system.

Claim 21 has been rejected as being unpatentable under 35 U.S.C. §103(a) over AAPA/Orowan as applied to claim 19 and further in view of Good et al. This rejection should be reversed and the claim be deemed allowable for the reasons advanced for claim 19 and also for the reason that there is no proper basis for the combination proposed by the Examiner.

### **CLAIMS 22 AND 23**

Claims 22 and 23 recite as follows:

22. An assembly comprising: a metal support frame;  
a panel of light-gauge steel mounted to said support frame;  
a structural adhesive curable at room temperature disposed between said support frame and said panel;  
a plurality of fasteners driven through said panel into said support frame,  
so that said panel is joined to said support structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener.
23. The assembly of claim 22, wherein the fasteners are selected from the group consisting of self-drilling screws, rivets, pins and clinches.

Claims 22 and 23 have been rejected over AAPA in view of Orowan. This rejection should be reversed and the claims be deemed patentable for the reason that there is no proper basis for the proposed combination and the proposed combination fails to disclose, teach or suggest wherein "said panel is joined to said support structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener".

### **CLAIM 24**

Claim 24 recites as follows:

24. The assembly of claim 22, wherein said adhesive is a two part epoxy system.


Claim 24 has been rejected as being unpatentable under 35 U.S.C. §103(a) over AAPA/Orowan as applied to claim 22 and further in view of Good et al. This rejection should be reversed and the claim be deemed allowable for the reason that there is no proper basis for the proposed combination of AAPA/Orowan with Good et al and further, there is no proper basis for the feature wherein "said panel is joined to said support structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener".

### VIII. CONCLUSION

There is no proper basis for the Examiner's proposed combination of AAPA and Orowan. There is further no proper basis for the Examiner's proposed combination of AAPA/Orowan and Good et al. Even if the proposed combinations were proper, none of the references individually or in combination properly disclose, teach or suggest all of the features of each of the claims. Accordingly, the rejection under 35 U.S.C. §103(b) of claims 1-24 should be reversed and the claims deemed patentable.

Respectfully Submitted,

ALEX S. TOBACK

By:   
Guy D. Yale  
Registration No. 29,125  
Alix, Yale & Ristas, LLP  
Attorney for Applicant

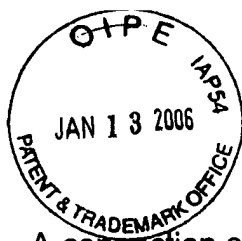
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Our Ref: TOB/102/US

GDY/RAN/io



## **IX. APPENDICES**

## **APPENDIX A      CLAIMS INVOLVED IN THE APPEAL**



1. A connection system for connecting at least one light-gauge steel panel to a support structure comprising:
  - applying an adhesive to at least one of said panel or support structure, said adhesive being curable at room temperature and able to adhere to steel;
  - placing said panel against said support structure;
  - driving at least one fastener through the panel into said support structure;
  - and
  - allowing said adhesive to cure,
  - so that said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.
2. The connection system of claim 1 wherein the fastener is selected from the group consisting of self-drilling screws, rivets, pins, and clinches.
3. The connection system of claim 1 wherein each said fastener is a self-drilling screw.
4. The connection system of claim 1 wherein said adhesive is a two-part epoxy system.
5. The connection system of claim 4 wherein said epoxy system comprises a resin and hardener which are mixed in substantially equal portions by weight.
6. The epoxy system of claim 4 wherein said epoxy system comprises a resin and hardener which are mixed in substantially equal portions by volume.
7. The connection system of claim 1 wherein said adhesive fully cures within approximately 72 hours.

8. A connection system for connecting at least one light-gauge steel member to a second member comprising:

applying a bead of epoxy to at least one of said members, said epoxy being curable at room temperature and able to adhere to steel;

positioning said members in adjacent relationship with said epoxy disposed between said members;

driving at least one fastener through one member into said other member; and

allowing said epoxy to cure,

so that said members are joined in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.

9. The connection system of claim 8 wherein the fastener is selected from the group consisting of self-drilling screws, rivets, pins, and clinches.

10. The connection system of claim 8 wherein each said fastener is a self-drilling screw.

11. The connection system of claim 8 wherein said epoxy comprises a resin and hardener which are mixed in substantially equal portions by weight.

12. The connection system of claim 8 wherein said epoxy comprises a resin and hardener which are mixed in substantially equal portions by volume.

13. The connection system of claim 8 wherein said adhesive fully cures within approximately 72 hours.

14. The connection system of claim 8 wherein a bead of epoxy is applied to both members.

15. The connection system of claim 1 wherein said adhesive is composed of a material selected from the group consisting of epoxy, methacrylate and urethane.

16. A connection system for connecting at least one light-gauge steel panel to a steel frame comprising:

applying a bead of adhesive to at least one of said panel or frame, said adhesive being curable at room temperature and able to adhere to steel;

positioning said panel against said frame with said adhesive disposed between said panel and frame;

driving at least one fastener through said panel into said frame; and allowing said adhesive to cure,

so that said panel is joined to said frame in a connection which is significantly enhanced in load-bearing capacity to a connection provided only by the at least one fastener.

17. The connection system of claim 16 wherein the fastener selected from the group consisting of self-drilling screws, rivets, pins, and clinches.

18. The connection system of claim 16 wherein the adhesive is selected from the group consisting of epoxy, methacrylate, and urethane.

19. An assembly comprising: a support structure;

a panel of light-gauge steel mounted to said support structure;

a structural adhesive curable at room temperature and disposed between said support structure and said panel;

at least one fastener driven through said panel into said support structure,

so that said panel is joined to said structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener.

20. The assembly of claim 19, wherein each said fastener is selected from the group consisting of self drilling screws, rivets, pins and clinches.

21. The assembly of claim 19, wherein said adhesive is a two part epoxy system.

22. An assembly comprising: a metal support frame;  
a panel of light-gauge steel mounted to said support frame;  
a structural adhesive curable at room temperature disposed between said support frame and said panel;  
a plurality of fasteners driven through said panel into said support frame,  
so that said panel is joined to said support structure in a connection which is significantly enhanced in load-bearing capacity in relation to a connection provided only by the at least one fastener.

23. The assembly of claim 22, wherein the fasteners are selected from the group consisting of self-drilling screws, rivets, pins and clinches.

23. The assembly of claim 22, wherein said adhesive is a two part epoxy system.

**APPENDIX B**

**DECLARATION OF ALEX S. TOBACK**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No. : 09/639,599  
Applicant : Alex S. Toback  
Filing Date : August 16, 2000  
Title : Connection System for Steel Construction  
  
TC/A.U. : 3726  
Examiner : Essama Omgba  
  
Docket No. : TOB/102/US  
Customer No. : 002543

Mail Stop Amendment  
Commissioner for Patents  
United States Patent and  
Trademark Office  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

***DECLARATION UNDER 37 CFR §1.132***

I, Alex S. Toback, hereby declare and state that:

1. I am Technology Consultant to Henkel Corporation of Rocky Hill, Connecticut and I am the named inventor of the above identified U.S. Patent Application.
2. I am presenting this Declaration to establish facts which support the patentability of the pending claims of the above identified application.



3. I have had extensive international, general management, industrial distribution, technical, manufacturing and marketing experience in the specialty chemical and fastener industries. Since 1995 I have been very actively involved in designing fasteners and fastening systems for the light gauge steel industry and in particular fastening systems which are employed in light gauge steel construction for light commercial and residential applications.
4. I have extensive knowledge and background in both the mechanical and the chemical fastening technologies and have used that background and knowledge to address the issue of providing fastening systems for the light gauge steel industry. A true copy of a resume of my educational, managerial and technical career in the specialty chemical and fastener industries is attached to this declaration as Exhibit A.
5. It is very apparent in reviewing the Office Action dated February 8, 2005, and in particular the portion commencing with page 2, paragraph 3 that the rejection of the claims is based on an inaccurate, very incomplete appreciation of the level and knowledge of one of ordinary skill in the light gauge steel construction industry at the time of my invention.
6. As stated in the Patent Specification and as referenced by the Examiner, at the time of the invention of the pending claims 1-24, it was known in the light gauge steel construction technologies to provide a light gauge steel construction and assembly wherein numerous self drilling screws or other fasteners were used to provide a connection between a panel and a support structure (the Examiner refers to the latter as "AAPA"). It was in this context, as President of Metaltite

Corporation, a specialty mechanical fastener corporation, that I turned my attention to the fastening systems for the light gauge steel industry and my original focus in this regard was purely in terms of mechanical fasteners.

7. At the time of my invention of the pending claims of the patent application, a person of ordinary skill in the light steel construction industry was wholly focused on mechanical fasteners and how to provide an improved mechanical fastening system. Until I started to consider addressing the light gauge steel construction fastening systems, there was no thought or suggestion whatsoever in the light gauge steel construction technology of using chemical or adhesive systems in light gauge steel construction. One important factor in assessing the level of ordinary skill and knowledge is that the light gauge steel construction industry typically must comply with building and fire codes in connection with the integrity of the fastening systems, and these codes were and typically now are all based on mechanical fastening systems.

8. Therefore, the statement by the Examiner "Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used an adhesive material in the connection of AAPA, in light of the teachings of Orowan, in order to relieve the load on fasteners to a relatively small extent and give protection against threading of the parts joined" fails on two grounds. First, there is no objective evidence that it would have been obvious in any way to even attempt to use an adhesive system for light gauge steel construction. Second, the problem addressed was not "to relieve the load on fasteners to a relatively small extent and give protection against fretting between the parts joined." The defined problem which was addressed by the invention of claims 1-

24 of the present application was to provide a fastening system of high integrity which could be implemented in a highly efficient and cost effective manner through improvement of mechanical fasteners and reduction of labor costs since labor is such a significant factor in the cost of the light gauge steel construction. This solution was realized by the use of both mechanical fasteners and the adhesive systems as set forth in the claims 1-24 of the pending application.


9. Contrary to the assertion of the Examiner, there is no evidence that one of ordinary skill in the light steel construction industry would have turned to the Orowan reference. The Orowan reference when carefully examined by one of ordinary skill in the light gauge steel construction industry would be deficient for the following reasons: First of all Orowan focuses on, as acknowledged by the Examiner, a protection against fretting between parts joined. This was not a problem presented in the light gauge steel construction technology at the time of the invention. The present invention is concerned with high strength assemblies which under stress in almost all cases result in failure of steel components rather than the connections. Second, the solution by Orowan proposes a relatively expensive and complex strip of adhesive tape which simply would not be suitable for the application as recited. Third, the Orowan reference does not, considered as a whole, result in a fastening system where the assembly is substantially enhanced in load-bearing capacity compared to that of the mechanical fasteners alone as provided in the assemblies of claims 1-24. Fourth, the passage at col. 1, lines 24-29 does not support the conclusion that "the connection of Orowan is significantly enhanced in load bearing capacity".

10. Contrary to the apparent belief of the Examiner, the invention by the undersigned applicant is not a mere paper concept, but is in fact an invention which has been tested by experts in the light gauge steel construction industry and has great potential as an industry standard. A true copy of a report submitted to the applicant which shows test results on some applications of the applicant's claimed system is attached hereto as Exhibit B.
11. As a result of the invention embraced by the pending claims of the application, I have been contacted by numerous prominent companies and organizations in the light gauge steel industry to discuss the invention and further development of the invention for specific light gauge steel applications. I have been requested to make presentations at industry technical meetings and trade shows. On October 20, 2004 the Light Gauge Steel Engineers Association awarded me a certificate in recognition of outstanding contributions to the advancement of adhesives for the Steel Framing Industry.

I hereby declare that all facts and statements made above are true and accurate to the best of my knowledge and belief and that any opinions are true to the best of my knowledge and belief, and any willful and false statements will jeopardize the validity of any patent issued in the above identified application and may subject me to prosecution under federal law.

Respectfully submitted,

Date: May 9, 2005

By:   
Alex S. Toback

GDY/tlc

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